

WHAT IS CLAIMED:

1. An optical recording medium suitable for recording/reproducing information by irradiating a laser beam at a wavelength between 395~425 nm onto the recording surface of the optical recording medium, the laser beam being incident from the substrate side of the optical recording medium through an objective lens having a numerical aperture of 0.62~0.68,

said optical recording medium comprising at least one substrate and at least one recording surface, said substrate having a thickness between 0.2~0.6 mm, wherein a total thickness of the optical recording medium is substantially 1.2 mm and a capacity of said recording medium is greater than 13.8 Gbytes per one recording surface.

2. The optical medium of claim 1, further comprising:
a reflective film formed between first and second substrates of the optical recording medium.

3. The optical medium of claim 2, further comprising:
a recording material layer formed between the reflective film and the second substrate.

4. The optical medium of claim 1, wherein
a first substrate of the optical recording medium has a pit pattern on a surface thereof; and
a second substrate is formed over the surface of the first substrate.

5. The optical medium of claim 4, further comprising:
a reflective film formed between the first and second substrates.

6. The optical medium of claim 1, further comprising:
a first substrate;
a second substrate; and
a third substrate formed over the first substrate such that the second substrate is formed over a first surface of the first substrate and the third substrate is formed over a second surface, opposite the first surface, of the first substrate.

7. The optical medium of claim 6, wherein the third substrate has a same thickness as the second substrate.

8. The optical medium of claim 6, wherein the second substrate has a first pit pattern, and the third substrate has a second pit pattern.

9. The optical medium of claim 6, wherein
the first substrate has a first pit pattern on the first surface thereof and a second pit pattern on the second surface thereof.

10. The optical medium of claim 9, further comprising:
a first reflective film formed between the first and second substrates; and
a second reflective film formed between the first and third substrates.

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11. The optical medium of claim 10, further comprising:
a first recording material layer formed between the first reflective film and the second substrate; and
a second recording material layer formed between the second reflective film and the third substrate.

12. The optical medium of claim 10, wherein a total thickness of the first substrate, the first reflective film, the second substrate, the second reflective film, and the third substrate substantially equals 1.2 mm.

13. An optical recording/reproducing method of conducting recording/reproducing of information by irradiating a laser beam at a wavelength between 395~425 nm onto a recording surface of an optical recording medium having at least one substrate and at least one recording surface, the substrate having a thickness of 0.2~0.6 mm,

said laser beam being incident on the substrate of the optical recording medium using an objective lens having a numerical aperture of 0.62~0.68, wherein a total thickness of the optical recording medium is substantially 1.2 mm and a capacity of said recording medium is greater than 13.8 Gbytes per one recording surface.

14. An optical recording/reproducing apparatus for conducting recording/reproducing for information by irradiating a laser beam onto a recording surface of an optical recording medium

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having at least one substrate and at least one recording surface, and the substrate having a thickness of 0.2~0.6 mm,

said optical recording/reproducing apparatus comprising at least one laser beam source irradiating the laser beam at a wavelength between 395~425 nm and an objective lens for focusing the laser beam onto the optical recording medium, said objective lens having a numerical aperture of 0.62~0.68, wherein a total thickness of the optical recording medium is substantially 1.2 mm and a capacity of said recording medium is greater than 13.8 Gbytes per one recording surface.

15. The optical recording/reproducing apparatus as claimed in claim 14, further comprising:

numerical aperture control means for controlling the numerical aperture of the objective lens into 0.35 to 0.40, thereby recording and reproducing a second recording medium with a substrate thickness of approximately 0.6mm.

16. The optical recording/reproducing apparatus as claimed in claim 15, wherein the numerical aperture control means controls the numerical aperture of the objective lens into about 0.24, thereby recording and reproducing a third recording medium with a substrate thickness of approximately 1.2 mm.

17. The optical recording/reproducing apparatus as claimed in claim 14, further comprising:

numerical aperture control means for controlling the numerical aperture of the objective lens into any one of 0.35 to 0.40 and about 0.24, thereby selectively recording and reproducing a

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second recording medium with a substrate thickness of approximately 0.6mm and a third recording medium with a substrate thickness of approximately 1.2mm.

18. An optical recording medium suitable for recording/reproducing information by irradiating a laser beam at a wavelength between 395~425 nm onto the recording surface of the optical recording medium, the laser beam being incident from the substrate side of the optical recording medium through an objective lens having a numerical aperture of 0.62~0.68, said optical recording medium comprising:

- at least one substrate and at least one recording surface, said substrate having a thickness between 0.2~0.6 mm, a capacity of said recording medium being more than 13.8 Gbytes per one recording surface;

- a first substrate of the optical recording medium having a pit pattern on a surface thereof;

- a second substrate formed over the surface of the first substrate; and

- a reflective film formed between the first and second substrates.

19. An optical recording medium suitable for recording/reproducing information by irradiating a laser beam at a wavelength between 395~425 nm onto the recording surface of the optical recording medium, the laser beam being incident from the substrate side of the optical recording medium through an objective lens having a numerical aperture of 0.62~0.68, said optical recording medium comprising:

- at least one substrate and at least one recording surface,

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said substrate having a thickness between 0.2~0.6 mm, a capacity of said recording medium being greater than 13.8 Gbytes per one recording surface;

a first substrate;

a second substrate; and

a third substrate formed over the first substrate such that the second substrate is formed over a first surface of the first substrate and the third substrate is formed over a second surface, opposite the first surface, of the first substrate.

20. The optical medium of claim 19, wherein the third substrate has a same thickness as the second substrate.

21. The optical medium of claim 19, wherein the second substrate has a first pit pattern, and the third substrate has a second pit pattern.

22. The optical medium of claim 19, wherein the first substrate has a first pit pattern on the first surface thereof and a second pit pattern on the second surface thereof.

23. The optical medium of claim 22, further comprising:
a first reflective film formed between the first and second substrates; and
a second reflective film formed between the first and third substrates.

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24. The optical medium of claim 23, further comprising:
a first recording material layer formed between the first reflective film and the second substrate; and
a second recording material layer formed between the second reflective film and the third substrate.

25. The optical medium of claim 23, wherein a total thickness of the first substrate, the first reflective film, the second substrate, the second reflective film, and the third substrate substantially equals 1.2 mm.

26. An optical recording/reproducing apparatus for conducting recording/reproducing for information by irradiating a laser beam onto the recording surface of an optical recording medium having at least one substrate and at least one recording surface, and the substrate having a thickness of 0.2~0.6 mm, a capacity of said recording medium being greater than 13.8 Gbytes per one recording surface, said optical recording/reproducing apparatus comprising:

at least one laser beam source irradiating the laser beam at a wavelength between 395~425 nm and an objective lens for focusing the laser beam onto the optical recording medium, said objective lens having a numerical aperture of 0.62~0.68; and

numerical aperture control means for controlling the numerical aperture of the objective lens into 0.35 to 0.40, thereby recording and reproducing a second recording medium with a substrate thickness of approximately 0.6 mm.

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27. The optical recording/reproducing apparatus as claimed in claim 26, wherein the numerical aperture control means controls the numerical aperture of the objective lens into about 0.24, thereby recording and reproducing a third recording medium with a substrate thickness of approximately 1.2 mm.